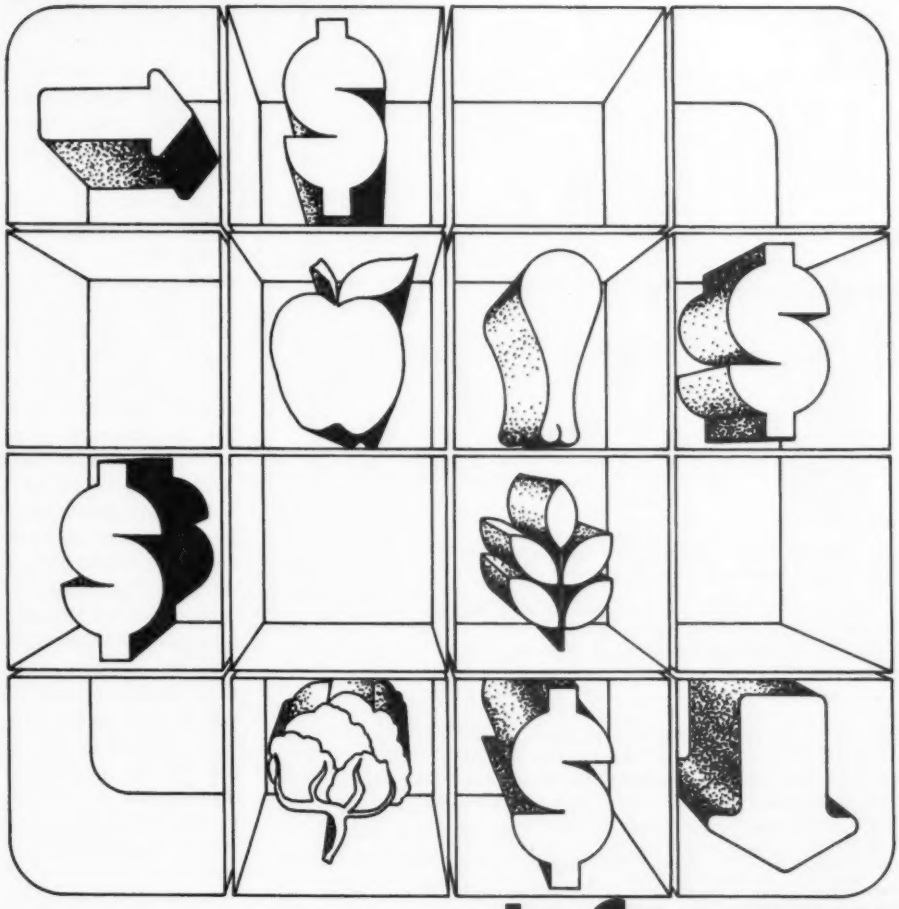
THE FARM INDEX

U.S. Department of Agriculture July 1975

From Farm...



to Consumer

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Outlook

The farm economy enters last half 1975 on a rising barometer. Leading indicators of better days are signs that the cost-price squeeze is letting up . . . bumper crops are on the way . . . export sales have quickened and foreign demand prospects look promising.

As the farm picture brightens, ERS forecasts of net farm income in 1976 are growing more optimistic. Latest reading calls for a total net in the low to mid-twenty billions of dollars—third highest in history.

Output of most crops will outdo 1974 volumes, led by record outturns of wheat and corn. Soybeans should show a hefty gain also. Livestock outlook features more beef and milk, substantially less pork, and maybe less poultry and eggs.

Retail food prices will edge up through the summer due to recent boosts in farm/wholesale prices and widening farm-to-retail price spreads. However, the retail price advance will trail last year's.

Per capita food consumption in 1975 is slated to dip slightly to the lowest level in 6 years. Gainers include: beef, cereal and bakery products, fruits and vegetables, and food fats and oils. Losers: pork, lamb, mutton, poultry, eggs, and milk.

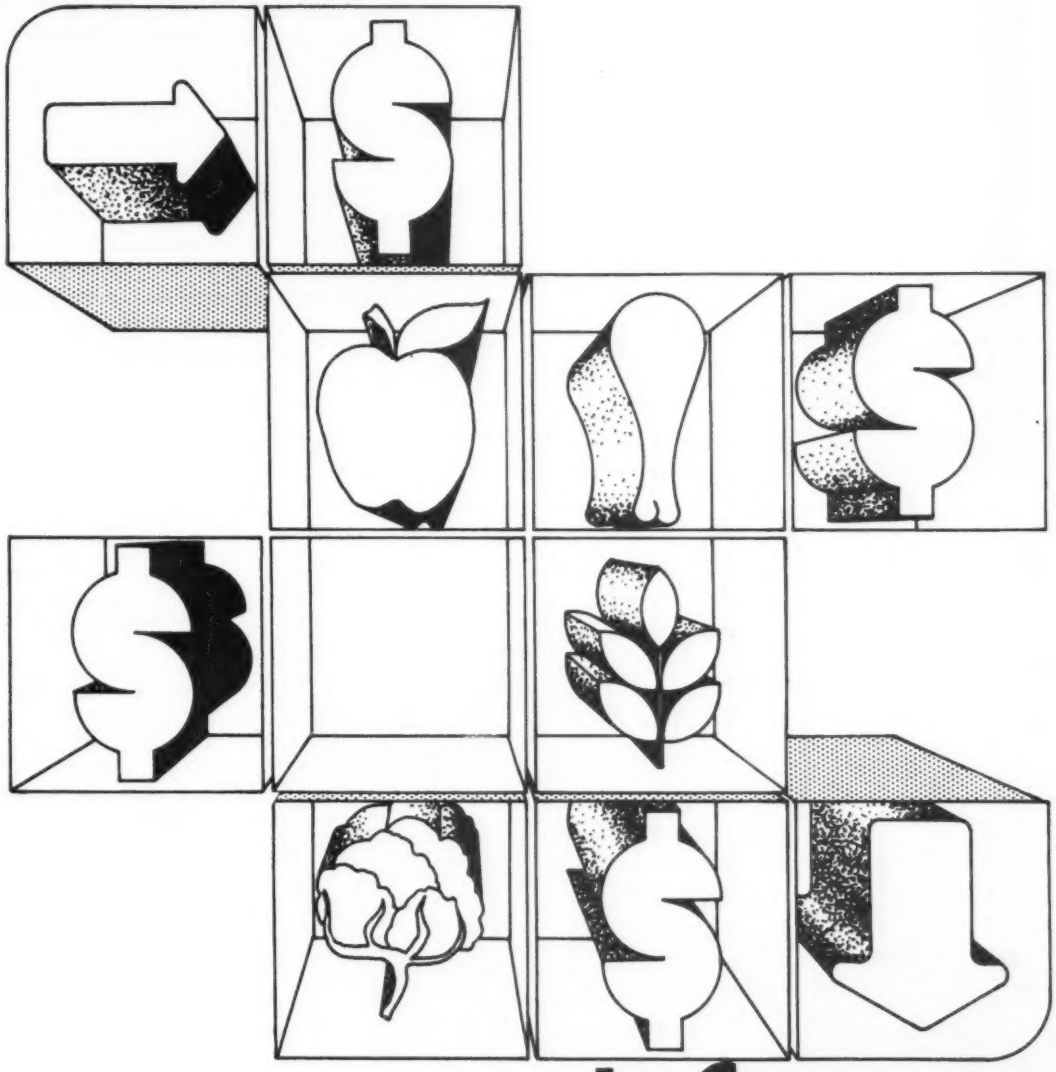
U.S. farmers will export more products in fiscal 1976 if their crops pan out as expected. Top four markets will likely remain Japan, the Netherlands, West Germany, and Canada.

Transportation system could be taxed by a big movement of grain for export. Typically, railcar shortages and transportation bottlenecks accompany sharp increases in exports which must be moved in short order.

Spurts in farm real estate prices seem to be slowing down. Prices in the year ending March 1, 1976, are not expected to change on the average. Analysts say it's because of continuing uncertainty over commodity price prospects and rising costs of purchased inputs. Previous year's gain was 14 percent.

Total value of farm real estate on March 1, 1975, came to $370.1 billion. Average value per acre hit $354.

From Farm...



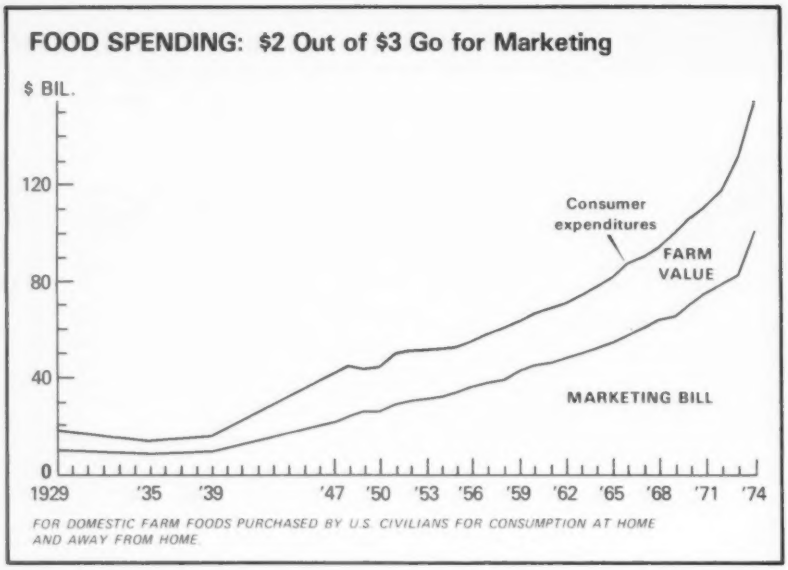
to Consumer

If you had to name some of the unwavering trends in American agriculture, hikes in the marketing bill would be high on the list.

The bill doubled since the early sixties, nearing the $100-billion mark in 1974. In fact, it's risen in just about every year from the time records have been kept—a constant reminder that the assembly, transport, processing, and distribution of farm output is becoming increasingly complex and important.

For example, in food processing and distribution alone, some 600,000 establishments employ about 5 million workers.

In total, the farm-marketing system provides jobs for almost 1 in 4 of the Nation's workers.



Boats, like this paddlewheeler, often brought the early-day farmer supplies.

And the marketing system now adds about $1.50 to every dollar's worth of food commodities sold by farmers.

In tandem. Farming and marketing have evolved together, each influenced by the other. The development of technology, merchandising, and product differentiation has strongly tipped the trend toward specialization in farming. At the same time, the rise in agricultural productivity and the increase in size of farms have produced changes in the way the marketing system works.

Both farmer and marketer are beholden to the consumer whose demands, as expressed by his food purchases, ultimately determine what food products will be produced, in what quantity, and how much will be paid for them.

The consumer, on the other hand, depends completely on the farmer and the marketer, particularly if he lives in a city as most do. This dependence is a fairly recent development.

Self-providers. During the first century of our Nation's life, most people produced most of their own food. The marketing system was mainly the country store, which sold salt, sugar, spices, and a few other staple products. Even in the larger towns and cities, many families kept a cow, a flock of hens, perhaps a pig or two, and cultivated a garden.

As the Nation grew and farming spread westward, a marketing system developed for staple products. Dealers plied the back country buying staples such as grain or flour and hauled them to the city by horse or ox-drawn wagon. Cattle were driven to the cities, sometimes as much as 200 miles. But few dealers handled perishables, production of which remained near cities.

Selling to townsmen. The towns had market days almost from the beginning. Market places were designated and rules for conduct of business enacted. Early in the colonial period, farmers were allotted stalls in market buildings where they could sell

their produce. Some of these soon were occupied by merchants who bought from farmers and sold to the townsmen. Several of these markets are still in business.

Peddlers also were important in the marketing system of that day. Some were farmers, but many were merchants who bought from farmers and sold door-to-door in the city. Most of the peddlers handled only one line of products.

Gradually, the peddlers gave way to specialized stores—meat markets, vegetable stores, fish markets, poultry and egg stores, and others.

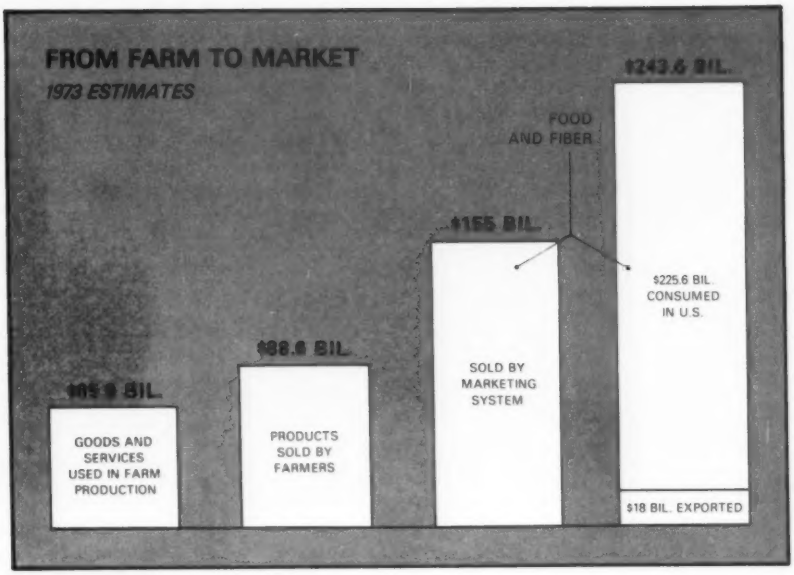
Some of the major milestones in the evolution of today's food system are in the field of transportation.

Not by chance. It was no happenstance that the original 13 States were strung along the Atlantic Coast, for the easiest means of transportation was by water. Wherever possible, food and other goods moved by sailing ship on the seacoasts and up the rivers. Away from the rivers, wagons took over where roads were passable. Livestock walked to market.

The 1820's and thirties saw the building of a canal system that eventually criss-crossed most of the level parts of the 13 States and extended into the Midwest. A main artery, the Erie Canal, opened up New York and States farther west to grain production. Grain farming in the prairies had to wait for the railroads, which came in the 1850's and soon replaced most of the canals.

After the Civil War, the advent of refrigerated rail cars using ice—and later the mechanical refrigerator car—made it possible to ship perishable foods over long distances. This in turn stimulated specialized dairying, meat production, and fruit and vegetable growing in areas far from population centers.

Trolley transport. Until the internal combustion engine came along in the late 1800's, the assembly of farm products from the farm to the elevator along the railroad track or other concentration point was still a very slow process. From the 1870's



Farmers line up to deposit their wheat in a steam-operated grain elevator.

Agricultural exports today are big business for the U.S., bringing in around $22 billion in 1974.

Piggyback truck and rail transportation, popular since World War II, streamlines delivery services.

By horse or buggy, 1920's strawberry farmers got their goods to market.

and as late as World War I, the "inter-urban" or trolley car hauled an amazing amount of perishable foods. The East and Midwest were laced with trolley tracks, and one could travel from the Atlantic Coast to the Rocky Mountains strictly on the inter-urban. But as the motor truck took over in the 1920's, the trolley retreated to the cities.

For perishable commodities, the country store was the buying station through much of the country's early history. Eggs, butter, fruit, and vegetables were purchased or bartered with the storekeeper for other items the farmer needed. The storekeeper shipped the goods to town or city, usually to a wholesaler.

The pace of change in marketing quickened after the turn of the century, and especially in the post-World War II period.

Chains to the fore. Though chainstores were organized in the last half of the 19th century, they did not become a major force in grocery distribution until the first 3 decades of the 20th century. By 1929, chains with four or more stores were doing slightly more than one-fourth of the food store business, though country general stores still did a sizable volume.

The typical chainstore of the twenties was small, and it stocked a limited number of fast-moving grocery items that included few if any perishables. It served a fairly limited area on a cash-and-carry basis. The chains of that period built their success on a low-price policy made possible by the elimination of services such as credit and delivery, and the economies of mass procurement and warehousing.

The "cheapies." The depression created a fertile field for the food retailer who could feature low prices. The early supermarkets took advantage of this situation, cutting costs and prices even further through economies of mass distribution. Some of these "cheapie" supermarkets even eliminated display racks, piling cases of groceries on the floor. Sometimes these stores were in warehouses or abandoned automobile showrooms.

With the better times of the late thirties, the supermarkets became attractive places to shop. Some of the chains which had been reluctant to convert to supermarkets became convinced that the road to prosperity led —and competition compelled—in this direction.

In 1939, chains with four or more stores operated 82 percent of the supermarkets (stores with annual sales of at least $300,000), compared with 52 percent in 1935.

Super sales. After wartime delays, conversion to supermarkets shifted into high gear. Their share of total food sales climbed to 63 percent in 1960 and then leveled off. Meanwhile, the shares for other stores continued to fall. Specialty food stores dropped from 17 percent in 1935 to 9 percent in 1974. The share for country general stores and others fell from 9 to 1 percent.

Along with the growth of mass merchandising through supermarkets, technological developments in processing, distribution, and merchandising made possible thousands of new products and new forms of old products.

Development of new products also was stimulated by the potential competitive advantage they offer. Once a new product has been successfully introduced under a brand name, the seller has created demand—a share of the market—for that product.

Demand creation has been one of the most potent forces operating in food marketing in the last half century or so. The typical supermarket handles 5 to 10 times as many items as the grocery store of 40 years ago.

Away-from-home market. Growing even more rapidly than the retail grocery stores is the away-from-home food market—restaurants and cafeterias, school lunchrooms, airline meal service, institutional mess halls.

"Fast food" establishments have registered the most dramatic increases. These include not only the familiar hamburger and hotdog stands but pizza parlors, fried chicken establishments, and an almost endless variety of others. A significant part of their business is for consumption off the premises.

All types of away-from-home eating establishments strongly emphasize reducing labor, particularly the fast food operations.

Fabricators. And the push to get labor out of the kitchen has created a strong demand for the services of a new class of supplier often called "fabricators", whose business is growing rapidly.

By supplying food in prepared or semiprepared forms, fabricators permit the server to put the item on the table with a minimum of labor. Meats are cut, wrapped, and boxed at the packing plant and delivered to the kitchen ready to go into the oven or onto the stove. Other operators prepare main courses or complete meals similar to TV dinners. The services of fabricators are particularly important where "captive" customers are being served, such as those on airplanes or in school lunchrooms.

Being different. Like retailers, food processors and manufacturers of dry grocery items have exerted tremendous efforts to make their products different enough to insure a share of the market.

Success often brings new problems, however. A new product that catches on will lead to imitations or slight variations by other processors, or to private label versions of it under chainstore brands. A manufacturer must maintain a continuous program of new product development so that he is never without new strings to his bow.

Marketers of perishable products have taken a somewhat different tack. Many have sought to broaden their lines. Fluid milk processors, for instance, have added new dairy products and fruit drinks. Some have developed their own outlets through dairy stores or convenience food markets in order to retain a place in the market.

Ice cream goes independent. Ice cream manufacturers have seen their outlets change from drug and confectionery stores to supermarkets in the past 20 years, with sharply increased emphasis on price competition at the retail level. They have responded by developing their own outlets—soft-serve ice cream stands and ice cream stores (many franchise operations) with emphasis on quality at relatively high prices.

In the broiler business, competitive pressures have led to a search for profits through integration into allied businesses such as feed mixing and distribution. Turkey processors have attempted to develop a line of "quality" turkeys as a differentiated product at substantially higher prices. The movement into further-processed poultry items is in part a search for differentiated products.

Branded Meats. Meatpackers also have engaged in a search for differentiated products that can be branded. So far these have been mostly processed products. The current emphasis on centralized meat

MARKETING

BILL

FOR FARM FOODS, 1974

	Billion*
Rent	$ 3
Depreciation	3
Advertising	3
Business Taxes	4
Interest, Repairs, etc.	4
Corporate Profits (*before taxes*)	6
Transportation (*intercity rail & truck*)	7
Other (*utilities, fuel, promotion, local for-hire transportation, insurance, etc.*)	11
Packaging	12
Labor	45

Grand Total $98 Billion

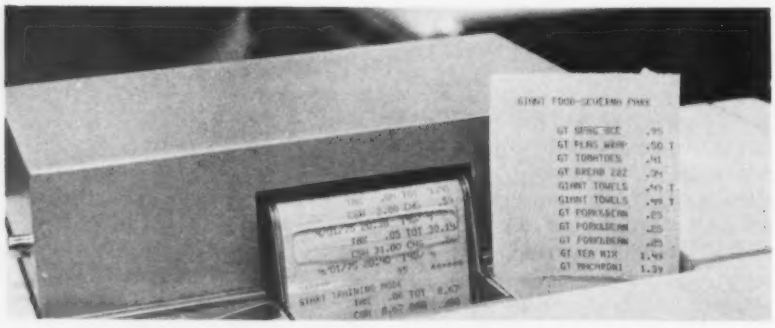
**Rounded to nearest billion, preliminary.*

The Changing Face of Marketing

Early shoppers found a variety of produce at the many open-air markets.

Not so long ago, specialty shops were the only way to buy groceries.

Forerunners to today's supermarkets were cooperative curb markets.



Eggs were popular bartering items and were accepted by most grocers.

Fresh or not, seafood was a favorite item in pushcart marketing.

What next? New computer assisted checkout system is faster and more accurate. The description and price of items are printed on the receipt.

cutting is partly an effort of meatpackers to gain control of the marketing process at the point where fresh meat is packaged for retail sale, making it possible to differentiate the product.

Processors in every line of business are becoming fewer in number and larger in size. The economies made possible by increased size have made it almost impossible for small firms to compete.

Processors also are more diversified than formerly. Companies which were well known as dairy or apple firms 15 or 20 years ago are now in so many lines of business it is hard to characterize them.

Spreading the risk. This movement is in response to the desire to minimize risk by spreading operations over a number of different products, the desire to cut costs by spreading merchandising efforts over a wide line of goods, and the need of many large firms to put their expansion efforts into other lines to avoid antitrust prosecution.

Not the least among the forces affecting marketing are the changes occurring on the farm. Increasing commercialization and greater size of farms has changed many purchasing practices. The assembly of milk and eggs, for example, has changed because individual farms now supply several times as much product as formerly. Costs of assembly are much lower than they otherwise would be and quality control problems are different. Many producers are now large enough to pack and deliver their own eggs directly to supermarket groups at low cost.

Some cattle feedlots have grown so huge that they slaughter their own cattle. They sell directly to meatpackers without the use of terminal markets or auction facilities. There is growing use of on-the-rail selling where the feeder is paid on the basis of the yield of dressed meat in the packing plant rather than on the buyer's estimate of the possible yield from a given lot of cattle.

[Based on special material by Alden C. Manchester, National Economic Analysis Division.]

When shopping was fun

One seldom looks forward to grocery shopping today. Jampacked parking lots, long lines at the cash register, picked over produce—who needs it? It's hard to believe that doing the weekly shopping was once looked upon with pleasure.

Back in the days when the country store was in vogue, whole families would pile into their wagons for the weekly shopping spree into town. They usually went on Saturdays, but would often arrange their trip to coincide with some other activity, such as a school play or a church social.

The country store offered a bit of everything. Such items as salt, coffee, tea, spices, ammunition, tools, and hardware were purchased by even the most self-sufficient farmer. Canned fruits, salted fish, and an assortment of candies were welcome additions to monotonous diets and those with sweet tooths. Clothing, especially overalls and work shirts, as well as boots and shoes, were fast-selling items, even though finding a size that fit was often a chore.

Most storekeepers gave credit and often accepted produce in lieu of payment. Eggs and butter were especially popular bartering items, because the storekeeper could sell them to a merchant for a tidy profit—providing they hadn't turned rancid from lack of refrigeration.

In 1872 the first comprehensive mail-order house opened for business, much to the chagrin of local storekeepers. This new service, which offered and glamorized just about every kind of merchandise the farmer and his family might possibly want, posed a direct threat to the country store.

In many small towns, the post office was located in the general store. Although storekeepers welcomed the extra money they received moonlighting as postmasters, they hated having the mail-order business operating right under their own noses!

With the birth of the automobile and good highways, most country stores have disappeared, and few of today's youngsters will witness this colorful feature of our American heritage.

[Based on special material by Wayne D. Rasmussen, National Economic Analysis Division.]

Food Still a Good Buy Despite Inflation's Bite

Although inflation has been pushing our food bills up, we're actually spending less of our income on food than we did at the beginning of the 1960's. This despite the fact that for the last 2 years the food share turned slightly upward after a continuing downtrend.

The Bureau of Labor Statistics conducted a 2-year survey and found that American families ate up only 16 percent of their income in 1972-73, compared with 20 percent in 1960-61.

And a bigger bite of the food bill went for away-from-home eating. During 1972-73, the average family spent over one-fourth of its food dollar on eating out—up from a fifth 12 years earlier. Over the 12-year span, the cost of eating out shot up 64 percent, compared with a 43-percent rise in the cost of eating at home.

How the at-home food dollar was divided did not differ significantly among income groups. However, as incomes rose, families tended to eat more beef and less other meat.

Overall, about one-third of the at-home food dollar was spent on meat, poultry, and fish—nearly half of this going for beef. The rest of the money was about equally divided among three other groups: (1) fruits and vegetables, (2) dairy products and eggs, and (3) all other food items.

[Based on "Food Expenditures of Families, 1972-73," by Corinne LeBovit, National Economic Analysis Division, in *National Food Situation*, NFS-152, May 1975.]

Aliens Involved in U.S. Food and Fiber

Foreign investments in U.S. food and fiber industries have become an increasingly hot topic in the past few years. Congress passed a law, the Foreign Investment Study Act of 1974, which authorized the Departments of Commerce and Treasury to study the issue and come up with some figures on how widespread the investments are. Officials hope to have first estimates within the next year and a half.

ERS recently cooperated with the Department of Commerce to develop a mailing list for a benchmark study. The mailing was made by Commerce to 876 U.S. firms believed to be involved in food and fiber-related activities and owned by 449 parent companies in 33 countries. Almost none of the firms were identified as being actually involved in farm production. Japan, England, Canada, the Netherlands, France, and Germany head the list of U.S.-based firms, in that order.

The findings are admittedly sketchy. The list of parent companies and their subsidiaries came mainly from published sources, who generally obtained their information from reports, newspapers, magazines, trade contacts, and chambers of commerce. None of the sources claimed complete coverage, and few attempts were made by the sources to verify the information with the listed firms.

The main drawback in gathering such information is that present State and Federal laws generally do not require identification of foreign ownership. Studies such as those under the Foreign Investment Study Act require reporting of foreign ownership, but data are aggregated.

[Based on unpublished data provided to the U.S. Department of Commerce by Kenneth R. Krause, National Economic Analysis Division. The final report will be published by the Bureau of Economic Analysis, U.S. Department of Commerce, in mid to late 1976.]

Farming Investments Mean Jobs, Business

What's good for farming may be good for the economy—particularly if you consider how farmers' spending for major inputs spurs business activity.

According to a recent analysis of a 1971 expenditures survey, each dollar farmers spent on fixed capital items for farming stimulated over $2 worth of business in the economy. And more than 660,000 jobs were associated with these purchases.

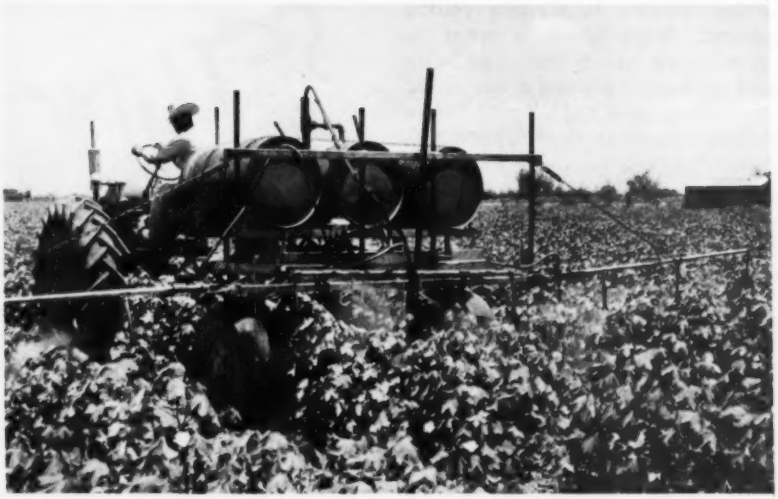
In 1971 farmers spent $7 billion for all capital items, requiring a little over $15 billion of business activity. The biggest chunk went for machinery—$4.9 billion. Buildings and other capital improvements accounted for the remainder.

Although purchases of farm machinery generated twice as much economic activity as building and other capital investments, nearly the same number of workers were affected by each category. However, the job mix required was quite different.

Investments in farm buildings and other improvements drew most heavily from construction jobs—65 percent. The rest of the employment impact fell on jobs concerned with supplying raw materials (13 percent), wholesale and retail trade jobs (9 percent), and other jobs (13 percent).

In contrast, the employment effects of spending for farm machinery and equipment were more widely spread throughout the economy. Also, investments for farm machinery and equipment stimulated a much greater share of jobs in the wholesale and retail trade sector—32 percent. This in part reflects the extensive trade network that is necessary to link concentrated machinery and equipment manufacturing with the widely scattered farm market.

[Based on the manuscript, "Farmers' Capital Expenditures, Who Benefits?," by Gerald Schluter, National Economic Analysis Division, and Thomas Niles, student at The American University.]



After a year of short supply, farmers may soon return to normal use of pesticides.

Pesticide Pinch to Ease Up Next Year

Pesticide shortages should ease substantially in 1976 after a 10-percent production increase boosted the 1975 pesticide supply.

The improved outlook, which is based on an ERS survey of firms that produce 75 percent of pesticides in the U.S., results from expanding production capacities and an easing of raw material shortages.

Supplies of most pesticides should be adequate or nearly adequate in 1976, thus enabling farmers to obtain them without many of the delays and allocative procedures that occurred in 1974. In 1974, severe shortages resulted when a 10-percent drop in supply was coupled with a 15-percent rise in demand.

Expansion of production facilities is a key factor in the supply improvement. Of 29 firms that responded to the survey, 21 are expanding or planning to expand.

Raw material shortages, which played a large part in the 1974 pesticide pinch, are also expected to lessen. While 80-percent of the firms experienced such shortages in 1974, only one-third reported shortages in 1975. However, energy availability problems should continue their negative effect on pesticide production.

The overall optimism for 1976 was apparent in the individual outlooks of the firms. More than half of the firms surveyed expect to meet production goals for pesticides to be used in 1976.

Only 15 percent predicted that production would fall short, and the remaining respondents were uncertain.

Even the firms that did not predict achievement of production goals agreed that they should come much closer to 1976 production goals than to 1975 goals.

The effects of the improving supply in 1975 have been offset, somewhat, by a serious depletion of available inventories in 1974.

Shortages forced producers to dip heavily into carryover stocks. Inventories dropped from 14 percent of the 1973 production to 8 percent of the 1974 output.

Thus, despite a 10-percent production increase, the net increase in pesticide availability may be 5 percent or less in 1975, as inventories are rebuilt.

[Based on the manuscript Pesticide Production, Raw Materials, Supply-Demand Evaluation 1974–76, by Theodore R. Eichers and Paul A. Andrilenas, National Economic Analysis Division.]

2.7 Million Hired Hands Now Work on U.S. Farms

A slight upturn in hired farm worker employment may have ended a two-decade-long downward trend.

The hired farm working force averaged 2.7 million people for 1972-74, up from 2.5 million in the previous 3 years.

This employment upturn came after a long-term decline which began in 1950, when there were 4.3 million hired farm workers.

The long term decline in the proportion of hired farm workers who live on farms continued. In 1948-49, 65 percent of all hired farm workers lived on farms. Today, only 24 percent live on farms.

The statistics, which were compiled for ERS by the Bureau of the Census, included all persons 14 years old or older who did farm wage-work at some time during the year.

In 1974, 1.6 million workers were employed solely in farm work, while 1.1 million performed both farm work and nonfarm work.

According to a statistical profile for 1974, the typical hired farm worker is young (23 years old), white (83 percent), male (79 percent), and he earns $1,447 annual wage, or $16.60 a day for 87 days of farm work.

The migrant worker force grew in 1974 to 209,000, marking the third straight yearly increase. Regular migrant workers averaged 78 days of farm wagework in 1974 and earned $1,688 ($21.60 per day).

On the negative side, the number of man-days dropped 6 percent in 1974 from 254 million in 1973 to 239 million man-days.

The distribution of the hired farm work force shifted slightly to the South and North Central States, with increases of 2 percent in both regions. This compares with a 2-percent decline in both the West and Northeast.

[Based on the manuscript "The Hired Farm Working Force of 1974," by Gene A. Rowe, and Leslie Whitener Smith, Economic Development Division.]

SELLING A

Jack Smathers had always been wary of tangling with commodity speculators. To him, trading in the futures market was like playing the horses—only track bettors knew the odds before the race began.

So in the past, he'd stuck to what he knew best—running his farm and marketing his crops at the best prices he could get. And he generally made out all right, with some years better than others.

But this year Jack began to wonder if he shouldn't have handled matters a bit differently. For one thing, market prices for his feed grains were heading down while his production costs remained high. For another, some of the other farmers in his area had decided to hedge their crops with futures contracts. And several had firmed up crop sales to local grain dealers shortly after planting.

Maybe, Jack thought, he should look into hedging his own crops. But with his limited knowledge of futures trading and other types of contracting, would he be getting in over his head?

Risks of waiting. Jack's questions may ring a bell with many producers who've shied away from forward contracts—and futures trading in particular—as overly risky or speculative. Most grain and livestock farmers still wait to sell after their crops are harvested or their livestock are ready for slaughter.

However, they may not have considered an important point—investing heavily in crop and livestock production without taking advantage of opportunities to sell before harvest is also speculation. In fact, some would say these producers are playing the riskiest game of all. They're banking all their returns on favorable harvest prices while leaving themselves open to cash market fluctuations as well as the potentially disastrous effects of disease and weather.

Signs of change. There are signs that this situation may be changing. The wide swings in farm prices and returns in the past few years have aroused considerable interest among farmers in forward selling options. Many growers want to know more about the possibility and wisdom of pinning down prices for their prospective outputs before making the large financial commitments for fuel, fertilizer, and other inputs required in modern farming.

They're also interested in pricing their products when prices seem most favorable, and in minimizing the impact of unstable prices on their returns. And with increased specialization in agriculture, many farmers, especially those who produce perishable or highly specialized goods, are concerned about lining up market outlets before harvest.

Choices and advantages. Various arrangements for forward contracting exist, ranging from the highly standardized terms and procedures of futures trading to simple verbal agreements between farmers and buyers. Most forward commitments fall into the broad middle ground between the two, and some may firmly specify quantity and grade of the commodity, time and place of delivery, and price, while others offer more leeway. These agreements—which are made outside an organized commodity exchange—are generally referred to as cash forward contracts to distinguish them from futures contracts.

But whether standardized or flexible, simple or formal, forward contracts offer several advantages: (1) they enable farmers to blunt the impact of nosediving prices on incomes and credit standings by fixing returns in advance; (2) they assure market outlets for farm products; and (3) they offer farmers a chance to sell when they believe prices to be highest.

Production guide. And whether or not a farmer makes a forward sale, forward market information in the form of futures prices or local bids can be used as a guide to what and how much to produce.

For example, a Corn Belt farmer could compare fall futures prices for corn and soybeans to help allocate land between these crops at planting time. A cattle feeder could examine live cattle futures before deciding how many—if any—cattle to put in his feedlot. When used as a guide in production decisions, forward markets may help farmers to boost their average returns over the long run as well as to cut risks.

In many cases, the gains farmers receive from selling ahead appear to argue strongly for forward contracting. Why, then, haven't producers used these tools more widely?

In the case of futures trading especially, farmers may be un-

AHEAD TO SAVE YOUR SHIRT

familiar with or suspicious of trading practices, which in itself is a deterrent to its wider use. Cash forward contracts have their pitfalls, too, such as the risk of default should a buyer go out of business.

Weighing risks. On the whole, while forward selling reduces the farmer's vulnerability to price risk, it may introduce or emphasize other types of risk that must be weighed against the contract's advantages.

For example, there's the chance that disease or bad weather could severely cut the producer's expected output—which he has already sold forward. Some farmers who sold corn and soybeans ahead last year came to regret it when they had to make up their production shortages by buying at high harvest prices. To minimize this problem, farmers should generally sell less than their anticipated production when output is uncertain.

Some of the other drawbacks—as well as plusses—of selling ahead are peculiar to the two major classes of forward contracts—futures and cash. Since each type of forward sale could suit some producers' needs better than others, here's a rundown of the two.

Futures trading. Futures markets offer two big advantages to buyers and sellers—widespread and easy access to other traders, and contract security. These factors are largely a result of the highly organized methods of futures trading, along with the extreme standardization of contract terms.

Since each commodity contract traded over an exchange specifies a particular quantity and grade, and

designates the location, time, and method of delivery, the only matter to be decided is price—which simplifies the task of getting interested parties together. If a farmer wanted to sell a futures contract, he could normally do so through a registered broker in a few minutes.

The integrity of futures transactions is secured by margin deposits which serve as escrow funds. Just as individual traders must deposit margin funds with their brokers, brokerage firms must also deposit margins backing the contracts they hold with the exchange clearinghouse.

Clearing contracts. The clearinghouse buttresses the margin system by becoming the opposite party to every transaction at the end of each day's trading. In other words, to insure each contract is met, the clearinghouse becomes the buyer to every seller and the seller to every buyer.

This arrangement makes it possible to liquidate futures positions with offsetting transactions. If a trader wanted to buy back a wheat contract he'd previously sold, there'd be no need to hunt down the original buyer. He could simply buy the same standard contract on the exchange and the purchase would offset his earlier sale. Nearly all futures commitments are settled this way, while goods generally change hands in cash markets.

From the standpoints of contract performance and ease in transacting business, futures trading offers farmers a reasonably safe, efficient means to fix their returns.

Futures vs. cash prices. However, it also poses a major risk. For hedging to be effective, the futures price and the cash price a farmer can get for his goods must move up or down together, so that gains in one market can offset losses in the other.

For example, if a farmer sells a corn contract because he expects prices to fall, he can offset his marketing loss when he buys back the contract at a lower price. But this only works properly if the two prices are closely related. If the cash price sinks much lower than the futures price, the farmer's actual returns will slip from what he originally expected.

The difference between cash and futures prices is called "basis." While these prices usually do move together, exceptions can occur.

Generally, the farther a farmer's local market is from his contract's par delivery point and the wider the quality difference between his crop and the par delivery grade, the greater is the likelihood that price movements won't be the same.

Coping with basis risk. To minimize basis risk as much as possible, growers should usually sell the contract with a par delivery grade most like their own crops. This isn't always easy—the standardized terms used in futures contracts seldom exactly describe the products farmers wish to sell.

Looking Forward

While most U.S. farmers have probably not engaged extensively in forward contracting, the practice is not new to agriculture.

Direct trading in organized futures markets is relatively rare, but some larger producers of wheat, corn, soybeans, cotton, and livestock do use futures contracts. And farmers have used cash forward contracting as a normal way of doing business for some perishable products—especially vegetables for processing, broilers, and eggs.

For other products, cash contracting in large volume is done sporadically. From time to time, surges in demand have sent buyers scurrying to line up supplies with attractive forward purchase offers. When there's no jump in demand that raises prices, farmers generally seem reluctant to make binding agreements to deliver nonperishable crops.

However, a significant amount of forward contracting has occurred in the highly commercial production areas, and it seems likely that as long as market prices are free to fluctuate, more farmers who invest substantial capital in their operations will want to consider this method of dealing with their risks.

It's also a good idea in many cases to trade on the commodity exchange closest to the market where the crop will eventually be sold. And farmers should generally pick the contract delivery month that most closely follows their planned marketing schedule.

Finally, the quantity sold forward in a futures contract should be less than expected production. Often a 70 to 90-percent hedge results in lower overall price risk than hedging all of the projected output. The minimum risk hedging level could go as low as 50–60 percent if the producer is far away from the par delivery point.

Lumpy futures. Smaller farmers could run into difficulties here because of the so-called "lumpiness" of futures contracts. Each contract calls for a fixed quantity to be delivered, and traders can't sell half a contract, or one and a half contracts. If they're unable to safely sell a full contract, small growers might consider selling a cash forward contract to a dealer who can hedge in futures.

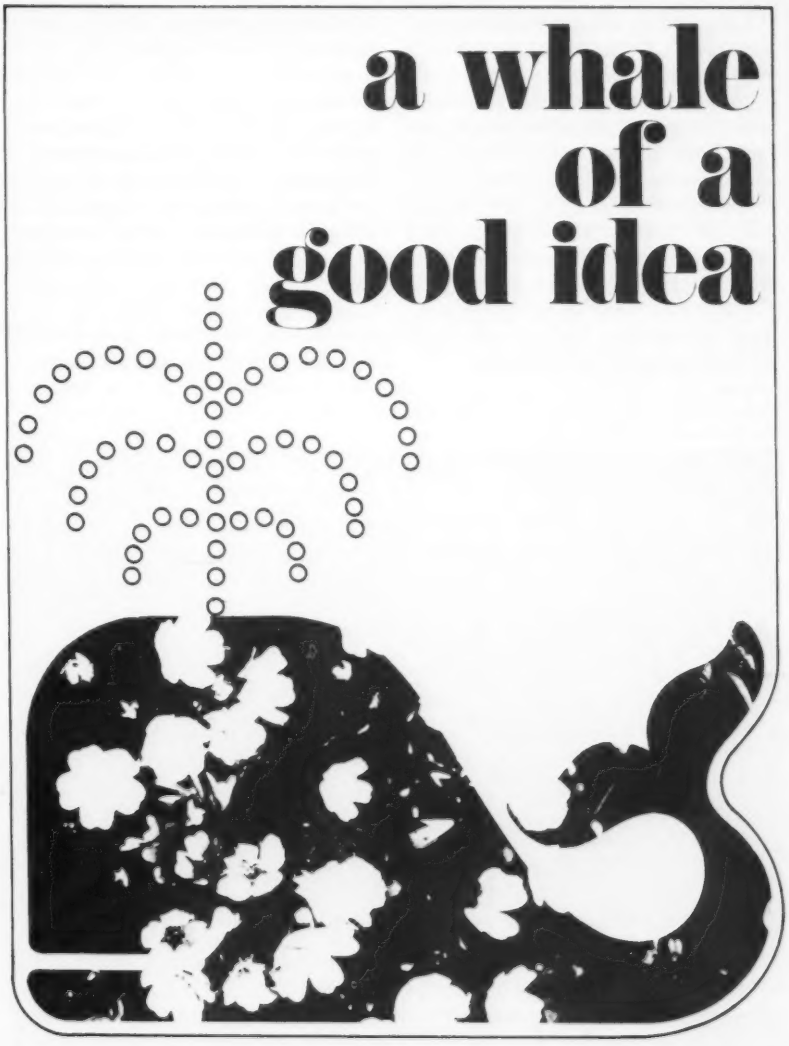
Another problem farmers should be aware of concerns financing margin deposits. The original margin a trader must pay is usually about 5–10 percent of the value of his contract. However, if the price of the contract moves against his trading position, he must put up additional money—called a variation margin—or be forced to buy or sell out.

For those who've sold a futures contract—called going short—this means a price rise would call for another deposit since the original margin would no longer be enough to back the contract's value. If the price fell, the trader holding a short position would have a surplus.

It's easy to see how a sharp price rise in a period of unstable prices could spell financial trouble for many farmers trying to maintain their short futures positions. Before selling a contract, producers should make sure either they or their banks can finance variation margins.

(Continued on page 17.)

a whale of a good idea



Three unpretentious plants may be the greatest thing that's happened to sperm whales since the endangered species list.

These plants—jojoba, a scruffy desert shrub; Limnanthes (meadowfoam), a flowering Pacific Coast annual; and crambe, a bushy member of the mustard family—are being studied by USDA and others as possible substitutes for the fine sperm whale oil once used in everything from cosmetics to automatic car transmissions.

Since the U.S. placed the sperm whale on the endangered species list and banned the import of its products in 1971, USDA and others have been hard pressed to come up with a substitute. Stockpiles of the precious sperm oil, accumulated by processors before the law became effective, will probably only last for another couple of years.

Commercial oil replacements. Commercial oils have been developed that work reasonably well as sperm oil replacements in such products as cosmetics and candles. Processors either use the replacement by itself or combine it with the sperm oil in stock.

One area the new oils don't work well in is in lubricants for car transmissions. General Motors claims that the lack of a suitable substitute for sperm whale oil in their automatic transmission fluid is causing serious corrosion problems in some late-model cars.

And they're not the only ones complaining. Most processors agree that none of the replacements holds a candle to the fine sperm oil, in essence a liquid wax and not an oil at all. Its uncanny ability to cling to gears and bearings puts it in a class all its own.

Jojoba last on list. At the time the sperm whale became protected by law and users of its oil were clamoring for a substitute, USDA took a close look at three oilseed plants, two of which they had already been studying for some time. Of the three, they believed the jojoba to have the least potential as a new crop.

Although the peanut-sized seeds of the jojoba contain a liquid wax ester almost identical to sperm oil, the problems of large-scale production seemed to outweigh the benefits.

For one thing, jojobas, which grow wild in semiarid regions of California and Arizona, take 5 years to reach maturity. In addition, it's impossible to tell the difference between the female seedlings, which bear the valuable seeds, and the male seedlings, which carry the pollen. Thus, until the plants are old enough to actually bear seeds, planting has to be done on a rather hit-and-miss basis.

Possible job for Indians. Despite these drawbacks, the National Academy of Sciences seems to think the jojoba is the best bet for replacing sperm whale oil, and has recommended that the Government back the development of 2,000 acres. If the Academy's recommendations are adopted, at least 26 Indian reservations in Arizona and California would get a contract to grow the plant.

USDA plant scientists felt that the other two choices—Limnanthes and crambe—offered greater crop potential as a replacement for the sperm oil, because both plants are annuals and can be harvested with any small-grain equipment.

Limnanthes, called "meadowfoam" because its thick white flowers look like a foamy seaspray, contains a unique vegetable oil that by chemical transformation can be converted into liquid wax esters similar to those of sperm whale and jojoba oils.

A winter annual. In its native habitat of northern California and southern Oregon, Limnanthes is a winter annual. Seeds are sown in the fall and harvested in early summer. This leaves time for another crop, such as beans, to be harvested.

The main problems with producing Limnanthes as a crop are that it has a tendency to sprawl and drop its seeds right when they're ready for harvesting. However, with 8 species and 11 varieties growing wild on the West Coast, the chances for breeding the plant to get more upright growth and better seed retention are good.

In fact, one such plant is already being studied. Tests on a variety of Limnanthes called "Foamore" have shown an average seed yield of 1,000 to 1,200 pounds per acre. How much such a crop would be worth to the farmer is something USDA doesn't know right now. Those studying the plant hope an economic assessment will be made soon.

Limnanthes' future as a crop. Meanwhile, work goes on researching herbicides, selection and breeding, seeding rate, fertility, and time and methods of harvesting. USDA plant scientists feel sure that Limnanthes holds promise of becoming a new oilseed crop. Just how long it will take depends on how much money they're given for research and how much pressure is put on the Government to develop a sperm oil substitute.

Another plant with good potential for replacing the valuable sperm oil is crambe, a bushy herb growing up to 3 feet tall that blooms delicate white flowers.

Unlike jojoba and Limnanthes, crambe is not a native of this country. It hails from the sunny Mediterranean and Africa. Crambe seeds were first introduced into the U.S. by the Connecticut Agricultural Experiment Station in the 1940's. Tests from Alaska to Louisiana have shown that the plant is tough and takes well to any area with a cool, moist planting season.

A summer annual. Crambe is a summer annual in most areas—planted in early spring and harvested about 3 months later. Because of its early harvest, a second crop of crambe can be planted around mid-July or as soon as possible after the first crambe harvest or following wheat. Crop yields have averaged about a ton of seeds an acre.

Each crambe plant holds up to 250 seeds. These seeds, about the size of No. 4 birdshot, contain a rich oil high in erucic acid. After chemical refining, the oil can be converted into wax esters, similar to the fine sperm oil.

In addition to its uses as a sperm oil substitute, crambe has potential in a number of other commercial products. For example, its oil is used as a slip agent in the manufacture of plastics. In addition, the primary byproduct of the oil extrac-

Limnanthes contributes to the spring wildflower display in its native West Coast habitat. Its potential as a new oilseed crop is promising.

tion process is a seed meal rich in protein. The U.S. Food and Drug Administration is considering the use of crambe meal as feed for fed cattle. Scientists studying the plant feel that this would provide the additional economic shot in the arm needed to promote crambe to new crop status.

Commercially grown. Crambe has already been grown commercially on a small scale in several States and Canada. The main production drawbacks have centered on not having an herbicide or a processor.

Much of the field research on crambe has been done at Purdue University. According to an ERS economist there, crambe might actually be better suited to Indiana's climate and soil conditions than corn or soybeans, their mainstay crops in that State.

He says the plant holds promise of becoming a new crop, providing farmers can make a profit growing it. Right now, crambe seeds are selling for about 12 to 15 cents a pound. With a crop yield of 2,000 pounds an acre, that's earnings of $240 to $300 an acre—a whole lot more profitable than wheat.

Industrial companies and research labs are paying up to $1 a pound for the planting seed. This is because many industrial oils are petroleum based, and with the high cost of petroleum, the extracted crambe oil has suddenly become very desirable.

The Government's desire to cut back our dependency on foreign oil should encourage the development of new oilseed crops, both for their use as a replacement for the fine sperm whale oil and for varied commercial uses.

Conservationists are as eager for these new crops as anyone, for the survival of the majestic sperm whales may well depend on their development.

[Based on special material by Bruce Right, National Economic Analysis Division, and K. J. Lessman, Professor of Agronomy, Purdue University; George A. White, Agricultural Research Center, Beltsville, Md.; L. H. Princen and John A. Rothfus, ARS, Northern Regional Research Laboratory, Peoria, Ill.]

(Continued from page 14.)

Cash forward contracting. Most farmers who sell forward tend to do so in cash dealings rather than in futures. This method of selling offers several advantages over futures trading, especially for producers primarily concerned with assuring market outlets for their goods.

Like a futures sale, a cash contract can fix a price level—and the farmer's returns—before production or harvest. But unlike hedging in futures, there'd be no further adjustment of the farmer's return through possible basis changes.

Cash contracts can also be tailored more closely to a farmer's particular needs in terms of quality and quantity of his product, and time and place of delivery. As a result, the producer can be fairly certain of being able to meet his sales commitment by delivery.

On the buying side, many merchants and processors are willing to make firm price offers to secure commodity supplies when needed, so suitable cash contracts need not be hard to come by.

Problems with buyers. However, many firms may not have the financial reserves to cope with adverse market developments—particularly those that require relatively heavy investments in commodity inventories. In some cases, a sharp drop in a product's market value may make it difficult for the buyer to fully honor his previous commitments and also stay solvent.

This situation poses a major risk for producers—and strongly underscores the need to investigate a potential buyer's credit-worthiness before entering into a cash forward contract.

Another problem raised by cash forward selling is the amount of time and effort that may be required to find the best deal. Good market information may be hard to get—especially in the sparser producing areas.

Hedging cash commitments. Both these problems may be partially solved if there's active futures trading in the farmer's commodity, and the buyer is able to hedge his purchase commitments by selling futures. This not only enables the farmer to evaluate the buyer's offer by checking futures prices, it also helps to insulate the buyer's finances from adverse price movements. Even if the value of the farmer's crop has deteriorated badly by the time it's delivered, the buyer can offset his loss when he buys back his futures contracts.

Not all cash contracts set a price level, however. Either firm price offers aren't readily available for a crop, or the farmer would rather assure a market outlet without fixing a price in advance.

In both cases, contracts can still specify all other terms of sale, while providing some method for determining price at a later date. The chief problem posed by deferred pricing agreements lies in selecting a reliable market quotation—either futures or cash—on which to tie the final price.

Which to choose? With all the options available, what kind of contract should a farmer choose if he decides to sell his output forward? It's an individual decision, but these general guidelines may be helpful:

If market outlets are plentiful and output is large enough, the producer who is primarily interested in fixing his returns might be better off selling directly in the futures market.

On the other hand, if outlets are limited, or the farmer doesn't want to assume a basis risk, cash forward contracts that guarantee markets would be the best choice—especially for crops that can't be stored.

[Based on the manuscript Farmers' Use of Forward Contracts and Futures Markets by Allen B. Paul, Richard G. Heifner, and John W. Helmuth, National Economic Analysis Division.]

THE SUNSPOT CONNECTION

Sunspots, the massive, whirling magnetic storms on the solar surface, may be a signal of abnormal crop yield conditions . . . particularly for the men who farm the high plains.

Although no one has quite figured out how a 100,000-mile-wide storm 93 million miles away can make corn and other crops grow better or worse, a report from ERS indicates there may be a relationship.

The study adds new evidence to support the theory that solar cycles affect the length of growing season, temperature, rainfall, radiation levels, atmospheric pressure, and high altitude wind speed—factors which can make or break the crop farmer.

Links cited. The study, which compared selected crop yields to sunspot activities since 1866, concludes:

- Higher than average crop yields may be associated with high sunspot activity.
- Lower than average yields may be associated with low sunspot activity, such as the current phase.
- Sunspot cycles may prove useful in forecasting crop yield deviations.

Although the ERS study adds to evidence of a relationship between sunspots and the mysterious ways of Mother Nature, it is by no means the first hint of the link.

As one authority said, sunspot activity corresponds "to a periodicity of magnetic and possibly other phenomena on earth."

Magnetic effect. Scientists have found, for instance, that magnetic needles oscillate most when sunspot activity is maximum, and auroras are greatest when sunspot activity is minimum.

Interest in the strange, dark spots culminated in a 19th century scientific fad of attributing all sorts of earthly phenomena to the sunspots.

Less enthusiastic colleagues of sunspot theorists dampened such enthusiasm with the contemptuous term "sunspottery" which was applied to sunspot theories and other forms of scientific madness.

Despite the guffaws, the sunspots didn't go away, and respected scientists are beginning to view them again with the gnawing thought that some earthly mysteries may originate in the eye of these solar "hurricanes."

Cool, dark areas. Sunspots are large, dark areas on the solar surface which, some analysts speculate, may be "hydro-magnetic storms." The sunspots are much cooler than other parts of the sun's surface. They come in pairs and rotate like giant hurricanes. Scientists find greater solar X-ray emissions with sunspot increases.

Since about 1600, scientists have kept continuous records of sunspot activity by counting the number of groups of sunspots. They found that sunspot activity occurs in regular cycles from minimal activity to maximum and back to minimal activity.

A "single sunspot cycle" lasts an average of 11 years, with a 7½- to 16½-year maximum range, according to records since 1750.

Double sunspot cycle. Some experts prefer to use a "double sunspot cycle," by plotting every other single cycle negatively (below the line on a graph). The double cycle is justified because single cycles alternate in intensity, because the sun reverses magnetic polarity every 10 years or so, and because the polarity of magnetic fields of leader spots of sunspot pairs on opposite sides of the sun's equator reverses at the start of a new single cycle.

The study used both single and double sunspot cycles, and found some patterns in both.

The double cycle is especially significant in weather cycles and, therefore, crop yields.

High plains drought. On the high plains, a drought normally occurs just after the low point after the negatively plotted high of the double cycle. On a graph, this is the point just above the horizontal line separating positive and negative cycles.

In the summer of 1975, sunspot activity is approaching that point.

Since 1610, the average double cycle has lasted 22 years, but since

Sunspottery

SUNSPOTS—Cool areas on the surface of the sun that appear dark when contrasted to the hotter, brighter solar mass.

Sunspots occur only within 45 degrees of the sun's equator, and last from a few hours to several months. In size, they may range from 100 miles to 100,000 miles in diameter.

While little is known about them, sunspots occur in pairs, rotate like giant hurricanes, and have a very strong magnetic field.

SUNSPOT NUMBERS—An index that measures the number of spots and the number of groups of spots moving across the sun. Sunspot numbers have been kept since 1610.

SINGLE SUNSPOT CYCLES—Sunspot activity occurs in a regular cycle, from a low point of activity to a high point, then back to a low point. Since 1755, single cycles have lasted about 11 years, or 10½ years since 1900. Ranges are from 7½ to 16½ years between highs, and 9 to 13 years between lows.

On the average, about 6.4 years lapse between the high and low point, and 4.6 years between low and high points.

DOUBLE SUNSPOT CYCLES—Two consecutive single sunspot cycles are plotted together to form a double sunspot cycle.

Recent cycles alternate in magnitude, thus the weaker single cycle is plotted negatively (below the line) on a graph. A double sunspot cycle lasts 21 or 22 years.

The double sunspot cycle also coincides with the sun's reversal of magnetic polarity each 10-11 years.

1900, the cycle has decreased to about 21 years.

In the ERS study, this regular sunspot cycle was compared to selected crop yields from 1866 to 1973.

Specifically, Texas and Kansas wheat, Illinois and Nebraska corn, Texas cotton, and Louisiana rice (since 1895) were studied.

Other factors. The researcher who did the ERS study stressed that sunspots are only one of several factors that may affect crop yields. Also, indications are that the effects of a given cycle phase may differ drastically from one part of the country to another, and this study examines only specific States, mostly in the Plains region.

Nevertheless, patterns do emerge in many of the crops examined.

Texas wheat. A pattern of high wheat yields after sunspot activity peaks—and low yields after sunspot activity ebbs—is easily seen.

The normal crop yield in the year after a sunspot low was almost 2 bushels per acre less than the average yield.

In contrast, normal yields the year after sunspot activity highs was about 2½ bushels per acre above that of the year following sunspot low.

Three-year comparisons in periods immediately following both the high and low sunspot activity points sustain this pattern. The combined 3 years beginning with the high was more than a bushel per acre higher than the 3 years beginning with the low.

Variations were much less apparent in the double cycle, however. A comparison of the 5 years beginning with the negative peak showed that yield during the falling cycle was better than a bushel per acre higher than in the rising cycle. A 9-year comparison of rising and falling phases showed even a slightly greater difference.

The study encountered several variances from the double cycle pattern that may serve to emphasize that factors other than sunspots greatly affect yields.

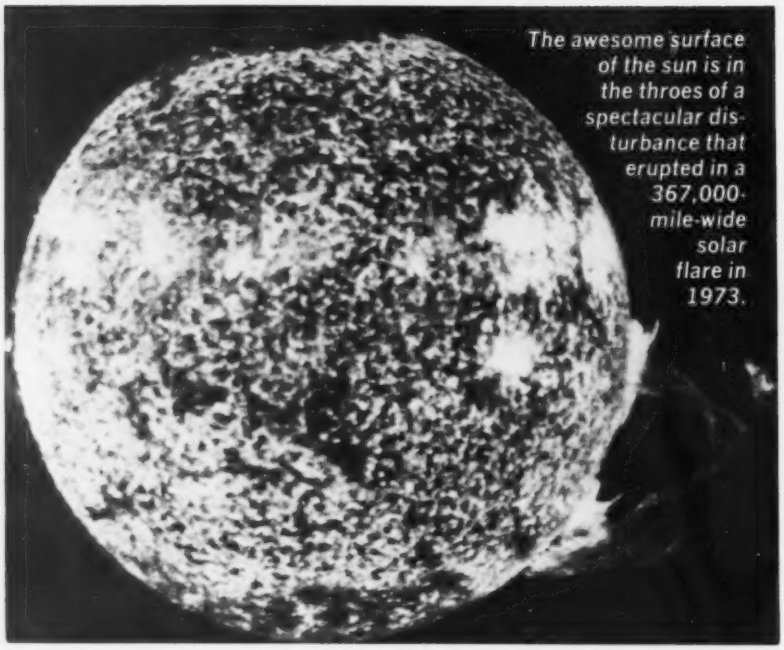
Kansas wheat. Single sunspot cycles failed to establish a significant pattern, with less than a bushel per acre difference between high and low peaks.

The double cycle also failed to establish a clear pattern, although some individual years showed marked yield differences.

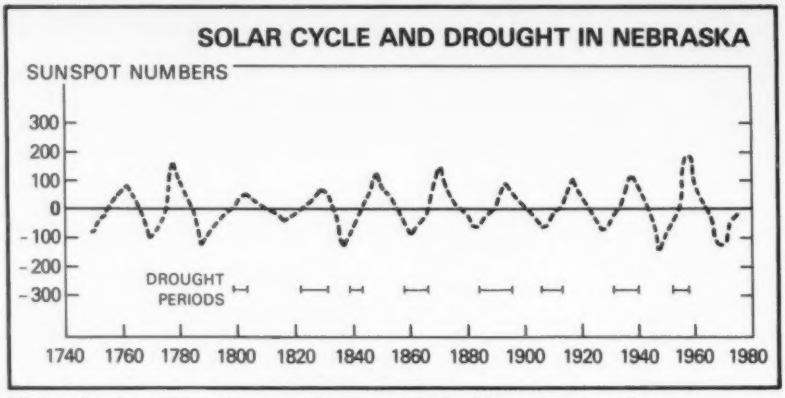
The study concluded that Kansas wheat crop yields may be associated with sunspot cycles, but high yield variability and a limited number of observations make any conclusions tentative.

Illinois corn. The pattern of low yields with low sunspot activity, and high yields with peak activity reemerged in the Illinois corn study.

Illinois corn yields in the 3 years beginning with the year of a sunspot low averaged more than 2½ bushels per acre less than the average for the 3 years beginning with the year of a sunspot high.



The awesome surface of the sun is in the throes of a spectacular disturbance that erupted in a 367,000-mile-wide solar flare in 1973.



Nebraska drought patterns coincide with double sunspot cycles. Each of the droughts plotted began soon after the rising phase crossed the zero line. That point of the sunspot cycle will be reached again within a year or so.

The "Dustbowl" drought of the mid-1930's resulted in such scenes as a 1936 dust storm in Boca County, Colorado (left), and dust-buried farm machinery in 1935 in Gregory County, South Dakota (above). Sunspot cycles and high plains droughts may be related.

In the double cycle, the falling phases are again associated with higher yields, especially immediately following the peak. For instance, the 3 years beginning with the year of the peak netted an increase of better than 2½ bushels per acre above average. Low yields were found during the rising phases.

Nebraska corn. Because of large variations in yields, a clear pattern failed to appear using single sunspot cycles.

Yet, the double sunspot cycle provided these observations:

- The first 2 years following a double sunspot low are marked by yield increases. (A double sunspot cycle low is the negatively plotted single sunspot high.)
- Double sunspot highs are associated with lower yields.

This finding concerning Nebraska corn yields is inconsistent with the results of Illinois corn that were discussed earlier.

Poor yields. Lower than normal yields occur 4 consecutive years, beginning with the 6th year after the double sunspot cycle low. These yields averaged more than 10 percent below normal. The same pattern is found in Illinois corn and Texas wheat.

This indicates that the low activity following the negatively plotted double sunspot cycle high—such as the impending phase of sunspot activity—is especially conducive to low yields.

Similar studies that investigated the relationship between sunspots and droughts found that droughts in Nebraska and other Plains States occur also during lows following negatively plotted double sunspot cycle highs.

Louisiana rice. The relationship between sunspot activity and rice yields is not so easily seen, perhaps because of a shorter study time frame (1895-1973).

Generally, declining and low sunspot activity is associated with lower rice yields, while rising and high activity is coupled with higher rice yields. In double cycles, the declining phase may indicate lower yields.

A stronger pattern emerged in the 4th and 5th years of decline when a 5-percent drop in yield is found. All yield observations were below normal during these years.

Texas cotton. No discernible relationship between Texas cotton yields and sunspot activities was found. Below normal and above normal observations seem clustered in alternate periods of 3 to 4 years each, but the clusters do not appear to relate to sunspot cycle stages.

Although the relationship between sunspot cycles and crop yield is still under study, several related studies have produced these results:

Some indications hint that weather trends have a similar pattern to that of sunspot cycles. As noted earlier, researchers have established a statistical link between sunspot cycles and many atmospheric conditions.

Another study attempts to link summer corn belt temperatures and the double sunspot cycle. The same study also contends that droughts may also follow sunspot cycles.

Eight droughts. According to the study, the last eight droughts were near the minimum sunspot activity following the minor maximum of double sunspot cycles—the stage that is about to occur.

- Other authorities contend that the growing season may be longer near sunspot maximum.
- Another researcher has found that recurring droughts on the American high plains closely follow the 20-to-22-year double sunspot cycle.
- An unpublished study by an ERS economist in 1973 found that the mean U.S. corn yield was almost a bushel per acre lower in the increasing phase than in other years of the double sunspot cycle.

Although these studies are by no means conclusive, such findings have muffled the derisive laughter that was once associated with "sunspottery".

[Based on the manuscript, "Crop Yields and Sunspot Cycles" by Virden L. Harrison, National Economic Analysis Division.]

Recent Publications

Price Spreads and Industry Margins not the Same. Economic Research Service. ERS–607.

Price spreads, gross margins, and net profit margins are not interchangeable terms, as this pamphlet points out. Rather, they measure distinctly different aspects of the farm to consumer spread.

Household Income—How It Relates to Substandard Housing in Rural and Farmers Home Administration Areas, by State and Race, 1970. Ronald E. Kampe, Economic Development Division. AER–287.

This study gives a breakdown by income and race of people living in substandard housing in 1970. It shows that although over 61 percent of the housing without complete plumbing was occupied by householders with less than $4,000 annual income, inadequate housing was not limited to the poor. Householders with incomes of $10,000 or more occupied nearly 7 percent.

Single copies of the publications listed here are available free from The Farm Index, Economic Research Service, Rm. 1664–So., U.S. Department of Agriculture, Washington, D.C. 20250. However, publications indicated by (*) may be obtained only by writing to the experiment station or university. For addresses, see July and December issues of The Farm Index.

World Monetary Conditions in Relation to Agricultural Trade. O. Halbert Goolsby and Eileen M. Manfredi, Foreign Demand and Competition Division. WMC–8.

This publication reviews the shifting world economic scene—from the oil crisis to recession.

Indices of Agricultural Production for the Western Hemisphere Excluding the United States and Cuba, 1965 through 1974. Foreign Demand and Competition Division. Statis. Bul. No. 540.

The indices of agricultural production in this publication were prepared as part of a continuing assessment of the current agricultural situation abroad.

Addresses of State experiment stations:

This ready reference list for readers wishing to order publications and source material published through State experiment stations will be updated again in Dec. 1975.

STATE	CITY	ZIP CODE
ALABAMA	Auburn	36830
ALASKA	University of Alaska	99701
ARIZONA	Tucson	85721
ARKANSAS	Fayetteville	72701
CALIFORNIA	Berkeley	94720
	Davis	95616
	Parlier	93648
	Riverside (Citrus Research Center)	92502
COLORADO	Fort Collins	80521
CONNECTICUT	New Haven	06504
	Storrs	06268
DELAWARE	Newark	19711
FLORIDA	Gainesville	32601
GEORGIA	Athens	30602
	Experiment	30212
	Tifton	31794
GUAM	Agana	96910
HAWAII	Honolulu	96822
IDAHO	Moscow	83843
ILLINOIS	Urbana	61801
INDIANA	Lafayette	47907
IOWA	Ames	50010
KANSAS	Manhattan	66506
KENTUCKY	Lexington	40506
LOUISIANA	Baton Rouge	70803
MAINE	Orono	04473
MARYLAND	College Park	20742
MASSACHUSETTS	Amherst	01002
MICHIGAN	East Lansing	48823
MINNESOTA	St. Paul	55101
MISSISSIPPI	State College	39762
MISSOURI	Columbia	65201
MONTANA	Bozeman	59715
NEBRASKA	Lincoln	68503
NEVADA	Reno	89507
NEW HAMPSHIRE	Durham	03824
NEW JERSEY	New Brunswick	08903
NEW MEXICO	Las Cruces N.M. State University (P.O. Box 3–BF)	88001
NEW YORK	Ithaca (Cornell Station)	14850
	Geneva (State Station)	14456
NORTH CAROLINA	Raleigh (Box 5847)	27607
NORTH DAKOTA	Fargo (State University Station)	58102
OHIO	Columbus (Ohio State University)	43210
	Wooster	44691
OKLAHOMA	Stillwater	74074
OREGON	Corvallis	97331
PENNSYLVANIA	University Park (106 Armsby Building)	16802
PUERTO RICO	Rio Piedras	00928
RHODE ISLAND	Kingston	02881
SOUTH CAROLINA	Clemson	29631
SOUTH DAKOTA	Brookings	57006
TENNESSEE	Knoxville	37901
TEXAS	College Station	77843
UTAH	Logan	84322
VERMONT	Burlington	05401
VIRGINIA	Blacksburg	24061
VIRGIN ISLANDS	St. Croix	00850
WASHINGTON	Pullman	99163
WEST VIRGINIA	Morgantown	26506
WISCONSIN	Madison	53706
WYOMING	Laramie (University Station Box 3354)	82070

Economic Trends

Item	Unit or Base Period	1967	1974 Year	1974 Apr.	1974 Feb.	1975 Mar.	1975 Apr.
Prices:							
Prices received by farmers	1967=100	—	184	183	168	165	170
Crops	1967=100	—	214	203	192	185	188
Livestock and products	1967=100	—	164	169	151	152	157
Prices paid, interest, taxes and wage rates	1967=100	—	169	164	180	179	182
Family living items	1967=100	—	161	157	175	173	173
Production items	1967=100	—	172	167	180	179	185
Ratio [1]	1967=100	—	109	112	93	92	93
Wholesale prices, all commodities	1967=100	—	160.1	152.7	171.3	170.4	172.1
Industrial commodities	1967=100	—	153.8	146.6	168.4	168.9	169.7
Farm products	1967=100	—	187.7	186.2	174.6	171.1	177.7
Processed foods and feeds	1967=100	—	170.9	159.1	182.6	177.3	179.4
Consumer price index, all items	1967=100	—	147.7	143.9	157.2	157.8	158.6
Food	1967=100	—	161.7	158.6	171.6	171.3	171.2
Farm Food Market Basket: [2]							
Retail cost	1967=100	—	161.9	159.9	169.3	168.5	168.2
Farm value	1967=100	—	177.6	174.8	173.5	171.4	175.7
Farm-retail spread	1967=100	—	152.0	150.4	166.6	166.7	163.5
Farmers' share of retail cost	Percent	—	43	42	40	39	40
Farm Income: [3]							
Volume of farm marketings	1967=100	—	111	87	95	93	91
Cash receipts from farm marketings	Million dollars	42,817	93,521	5,857	5,868	5,759	5,600
Crops	Million dollars	18,434	52,097	2,270	2,797	2,602	2,100
Livestock and products	Million dollars	24,383	41,424	3,587	3,011	3,158	3,500
Realized gross income [4]	Billion dollars	49.9	102.0	—	—	98.0	—
Farm production expenses [4]	Billion dollars	38.3	74.8	—	—	76.5	—
Realized net income [4]	Billion dollars	11.6	27.2	—	—	21.5	—
Agricultural Trade:							
Agricultural exports	Million dollars	—	21,994	2,011	1,920	1,911	1,758
Agricultural imports	Million dollars	—	10,247	878	694	749	762
Land Values:							
Average value per acre	Dollars	[6]168	[7]339	—	—	—	[8]354
Total value of farm real estate	Billion dollars	[6]181.9	[7]355	—	—	—	[8]370
Gross National Product: [4]	Billion dollars	793.9	1,397.4	—	—	1,416.6	—
Consumption	Billion dollars	492.1	876.7	—	—	913.2	—
Investment	Billion dollars	116.6	209.4	—	—	163.1	—
Government expenditures	Billion dollars	180.1	309.2	—	—	331.6	—
Net exports	Billion dollars	5.2	2.1	—	—	8.8	—
Income and Spending: [5]							
Personal income, annual rate	Billion dollars	629.3	1,150.5	1,125.2	1,193.4	1,195.7	1,203.1
Total retail sales, monthly rate	Million dollars	26,151	44,815	44,283	46,819	45,926	46,495
Retail sales of food group, monthly rate	Million dollars	5,759	9,980	9,689	10,643	10,805	10,513
Employment and Wages: [5]							
Total civilian employment	Millions	74.3	[5]85.9	[5]85.8	[5]84.0	[5]83.8	[5]84.1
Agricultural	Millions	3.8	[5]3.5	[5]3.5	[5]3.3	[5]3.3	[5]3.2
Rate of unemployment	Percent	3.8	5.6	5.0	8.2	8.7	8.9
Workweek in manufacturing	Hours	40.6	40.0	39.3	38.8	38.8	39.1
Hourly earnings in manufacturing, unadjusted	Dollars	2.83	4.40	4.25	4.67	4.71	4.71
Industrial Production: [5]	1967=100	—	125	125	111	110	110
Manufacturers' Shipments and Inventories: [5]							
Total shipments, monthly rate	Million dollars	46,449	81,723	79,050	78,875	77,028	80,101
Total inventories, book value end of month	Million dollars	84,655	150,404	128,438	151,993	151,184	150,184
Total new orders, monthly rate	Million dollars	46,763	83,297	82,059	76,139	73,882	78,368

[1] Ratio of index of prices received by farmers to index of prices paid, interest, taxes, and farm wage rates. [2] Average annual quantities of farm food products purchased by urban wage earner and clerical worker households (including those of single workers living alone) in 1959-61—estimated monthly. [3] Annual and quarterly data are on 50-State basis. [4] Annual rates seasonally adjusted 1st quarter. [5] Seasonally adjusted. [6] As of March 1, 1967. [7] As of Nov. 1, 1974. [8] As of March 1, 1975. Beginning January 1972 data not strictly comparable with prior data because of adjustment to 1970 Census.

Sources: U.S. Dept. of Agriculture (Farm Income Situation, Marketing and Transportation Situation, Agricultural Prices, Foreign Agricultural Trade and Farm Real Estate Market Developments); U.S. Dept. of Commerce (Current Industrial Reports, Business News Reports, Monthly Retail Trade Report and Survey of Current Business); and U.S. Dept. of Labor (The Labor Force and Wholesale and Consumer Price Index).

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